REMARKS/ARGUMENTS

1.) Claim Amendments

Claims 25-26 were previously canceled. Claims 1 through 24 are pending in the application. They have not been amended, but a courtesy copy of the claims is provided above.

2.) Claim Rejections – 35 U.S.C. § 103(a)

The Examiner rejected claims 1-3, 7-14, 16-19, 21-22 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Adoul, et al. (US 5,754,976) in view of Ubale, et al. (US 5,778,335). The Applicant respectfully traverses this rejection and requests that the Examiner reconsider his rejection.

As provided in MPEP § 2143, "[t]o establish a prima facie case of obviousness, ... the prior art reference (or references when combined) *must teach or suggest all the claim limitations*." Furthermore, under MPEP § 2142, "[i]f the examiner does not produce a prima facie case, the applicant is under no obligation to submit evidence of nonobviousness." It is respectfully submitted that the Office Action does not factually support a prima facie case of obviousness for claim 1 based on Adoul in light of Ubale because all elements of claim 1 are not taught.

Claim 1 states:

> 1. A multi-codebook fixed bitrate CELP signal block encoding/decoding method, including the steps of:
> *selecting, for each signal block, a corresponding excitation codebook identification from a pre-determined, signal block independent sequence of codebook identifications*; and
> encoding/decoding each signal block by using an excitation codebook having said selected excitation codebook identification.

As previously argued, neither Adoul nor Ubale teach the step of "*selecting, for each signal block, a corresponding excitation codebook identification from a pre-determined, signal block independent sequence of codebook identifications*." However, the Examiner maintains "Adoul teaches that the search complexity is drastically reduced by restraining the subset of code vectors of which a certain number of non-zero

amplitude pulses meet a pre-determined criteria which reads on 'selecting, for each signal block, a corresponding excitation codebook identification from a pre-determined, signal block independent sequence of codebook identifications' since the system is capable of selecting the subset a priori (col. 2, lines 22-23)."

The Applicant respectfully disagrees with the Examiner's characterization of Adoul. As one skilled in the art would know, the a-priori subset selection in Adoul is a pure codebook combination pruning procedure to reduce the overall search space and complexity for a given excitation codebook (without multiple codebook identifications). Since Adoul only discusses optimizing a search in one, and only in one, single codebook, there is no need for a "codebook identification" (an identification is only needed when there are multiple codebook identifications possible) and consequently there is no "corresponding excitation codebook identification" in Adoul. Thus, this claim element is not found in Adoul.

Adoul describes a method where a single codebook is searched in an optimized way with a pre-selection of which of the subsets that are to be searched. The result of this search in said pre-selected subsets are then coded in the codebook index of said single codebook. Thus, there is no attempt in Adoul to select "a corresponding excitation codebook identification." The goal in Adoul is to find the best position and amplitude indices for a given codebook given a complexity restriction.

All the subset pre-selection methods in Adoul are performed "in relation to the sound signal" (see Adoul, col. 3, line 9, and in claim 1) and are therefore not "signal block independent" as required by claim 1. In Adoul, the signal block dependent methods (in relation to the sound signal) for complexity reduction pre-selection are described for amplitudes (see col. 12, lines 34-67 through col. 13, lines 1-24). (Please note that the backward filter target vector D and the residual vector R' are both input signal block dependent.)

Additionally, the complexity reduction pre-selection methods for position determination described in Adoul (see col. 14, lines 19-67, col. 15 lines 1-7) are all related to signal block dependent parameters (e.g. Sp, Dp, Td). In other words, the a-priori subset selection methods described in Adoul are all signal block dependent, and

they do not result in a selection of excitation codebook identification as required by claim 1.

According to claim 1 of the present invention, the "sequence of codebook identifications" are "signal block independent". One skilled in the art would recognize that in claim 1 there is no connection between the selected "codebook identification" and the signal, thus there is no need for signal analysis to improve the spectral and phase variation of the codebooks. Furthermore, there is no need to transfer codebook identification from the encoder to decoder, (which saves bandwidth). Thus, in contrast to the Examiner's arguments, there is no selecting of *a corresponding excitation codebook identification from a pre-determined* as stated in claim 1.

The Examiner admits that Adoul does not teach all of the elements of claim 1. However, the Examiner believes that Ubale teaches implementation of multiple excitation codebooks. The Applicant respectfully disagrees with the significance of the Ubale reference.

As will be explained below, assuming *arguendo*, that the Examiner's characterization of Adoul and Ubale is correct, there were still be no motivation to combine the references because Ubale teaches against the combination.

As one skilled in the art would know, an algebraic codebook is basically a fixed codebook with a time and amplitude structure that can be described with a certain mathematical rule. The content of the algebraic codebook is fixed during the whole coding session. On the other hand, an adaptive codebook is a codebook that is adaptively and constantly updated during the coding session. Generally, the algebraic codebook is more robust to losses and the adaptive codebook gives a better prediction gain for stationary signals.

In Ubale, the use of one or more adaptive codebooks is proposed (see col. 6, lines 20-28). However, the variable number of adaptive codebooks also produces a variable bit rate and not the "fixed bit rate" as required by claim 1. Also note that Ubale discloses, at low rates, multiple adaptive codebooks may not be justified due to bit rate constraints (see col. 8 lines 57-61). Furthermore, in Ubale, the use of a multi-band codebook bank (col. 8, lines 10-26) is disclosed.

Ubale teaches the use of various signal dependent measures to select the final appropriate excitation codebook; especially the codebook setup/configuration is always performed in a signal dependent manner, in the signal dependent voice/music classifier (col. 4 lines 32-34; col. 5, lines 43-63; col. 6 lines 35-37; fig. 1). Additionally, the final multi-band codebook setup may also be performed by the use of signal dependent bit allocation (col. 9 lines 5-16; fig. 6). Ubale does teach a codebook structure with Multi-band Code Excited excitation, the final excitation is a composite signal of outputs from various codebooks whose indices have been determined in a signal dependent fashion.

However, there is no indication in either Adoul or Ubale that there is a gain of using signal independent selection of codebook identifications to enhance low rate speech coding. The selection of the set of multiple codebooks would be based on signal analysis and the complexity optimization would also be based on input signal dependent analysis. Thus, a straightforward combination of Adoul and Ubale yields a codec solution with multiple codebooks and with a complexity-optimized search of those codebooks, not selecting "a codebook identification, from a pre-determined, signal block independent sequence of codebook identifications" according to claim 1 of the present invention. Consequently, not all elements of claim 1 are taught by the combination of Adoul and Ubale. Thus, it is respectfully submitted that this rejection be withdrawn.

Furthermore, in Ubale, it is also stated that if several codebooks are used, a pitch value for each adaptive codebook is transmitted (col. 6, line 66 – col. 7, line 1). Thus, if multiple codebooks are used, no selection among them is performed. Instead one entry from each codebook is transmitted. Thus, Ubale actually teaches away from the combination claimed in claim 1.

Since it is well recognized that teaching away from the claimed invention is a *per se* demonstration of lack of *prima facie* obviousness, it is clear that the Examiner has not borne the initial burden of factually supporting any *prima facie* conclusion of obviousness. Thus, for this reason alone, the examiner's burden of factually supporting a *prima facie* case of obviousness has clearly not been met, and the rejection under 35 U.S.C. '103 should be withdrawn.

Independent claims 12, 19, and 22 are patentable for the same reasons that claim 1 is patentable. Additionally, claims 2-3, 7-11, 13-14, 16-18, 21 and 24 depend

from the independent claims and recite further limitations in combination with the novel elements of the independent claims. Therefore, the allowance of claims 2-3, 7-11, 13-14, 16-18, 21 and 24 is also respectfully requested.

The Examiner rejected claims 4-5 under 35 U.S.C. § 103(a) as being unpatentable over Adoul in view of Ubale, and further in view of Heidari, et al. (US 6,055,496). The Applicant respectfully traverses this rejection.

As discussed above, Adoul and Ubale do not disclose all the elements of claim 1. Claims 4 and 5 incorporate the elements of claim 1.

In Heidari, it is disclosed that one can establish a set of sub-vectors and then identify and encode the perceptually important sub-vectors (see e.g. claim 1). The step of selecting perceptually important sub-vectors clearly requires a signal block dependent analysis to determine the encoded sub-vectors. Furthermore, Heidari describes a signal dependent Vector Quantization approach. The sub-vectors are selected based on signal analysis and then the final sub-frame codebook excitation is constructed. The actual "best match" selection and subsequent encoding of the used sub-vectors (e.g. col. 5 lines 42-48) clearly shows the signal dependence used in Heidari to set up the final codebook configuration. Thus, there is no "*signal block independent sequence of codebook*" as required by claim 1 and incorporated into claims 4 and 5. In fact, Heidari would teach away from the claimed combination.

Thus, it is apparent that Heidari does not make up for the deficiencies of Adoul and Ubale discussed above. Therefore, claims 4 and 5 are also patentable. The Applicant, therefore, respectfully requests that the §103 rejection for claims 4 and 5 be withdrawn.

The Examiner rejected claims 6, 15, 20 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Adoul in view of Ubale, and further in view of Deller, et al. (1987, Discrete-Time Processing of Speech Signals). The Applicant respectfully traverses this rejection.

As discussed above, Adoul and Ubale do not disclose all the elements of claim one. Deller does not make up for the deficiencies of Adoul and Ubale. Thus, claims 6,

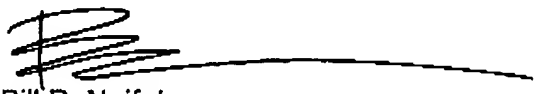
15, 20 and 23 are also patentable. The Applicant, therefore, respectfully requests that the §103 rejection for claims 6, 15, 20, and 23 be withdrawn.

CONCLUSION

In view of the foregoing remarks, the Applicant believes all of the claims currently pending in the Application to be in a condition for allowance. The Applicant, therefore, respectfully requests that the Examiner withdraw all rejections and issue a Notice of Allowance for all pending claims.

The Applicant requests a telephonic interview if the Examiner has any questions or requires any additional information that would further or expedite the prosecution of the Application.

Respectfully submitted,



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